

## CHAPTER 5

UNCRATING AND INSTALLING THE MISSILE ROCKET  
MOTOR ASSEMBLY

## Section I. PRELIMINARY PROCEDURES

## 5-1. Removal of the Forward Body Section

a. Rotate the forward body section to the normal flight position.

b. Remove the hexagon-head bolt (11, fig. 3-29) and flat washer (10) that secure the left side of the forward body section (8) to the testing fixture (5).

**Warning:** Insure that the self-locking pins (view A, fig. 9-1) are inserted through the handling ring segment prior to performing c below.

c. Swing the forward body section to the right until the hinge lock pin (12, fig. 3-29) snaps into the locked position.

d. Disconnect fail-safe wiring harness connector P502 (8, fig. 3-30 or 2, fig. 3-31).

e. Disconnect fail-safe wiring harness connector P511 (5, fig. 3-30 or 4, fig. 3-31) from sequential timer.

f. Disconnect transponder control group wiring harness connector P503 (2, fig. 3-30 or 11, fig. 3-31) from fail-safe control wiring harness connector J503 (3, fig. 3-30 or 10, fig. 3-31).

g. Remove the shoulder bolt (18, fig. 3-31), and disconnect transponder control group wiring harness connector P1 (13, fig. 3-30 or 19, fig. 3-31) from transponder control group connector J1 (15, fig. 3-30 or 16, fig. 3-31). Install the protective cover on J1.

h. Remove the transponder control group wiring harness (24, fig. 3-30 or 13, fig. 3-31) from the forward body section.

i. Remove the transponder control group wiring harness from the hole in the testing fixture (12, fig. 3-31). Insert the harness through the opening in the handling ring segment (7) above the upper fin, and place it on top of the missile.

j. Swing the forward body section (14) to the left until the hinge lock pin (12, fig. 3-29) snaps into the locked position.

k. Position a hoisting device capable of lifting 6,000 pounds for removal of the forward body section from the testing fixture.

**Caution:** Insure that the forward body section hoist is secure.

l. Attach the falling hook (6) from the hoisting device to the forward body section hoist (7), and take up the slack in the hoist cable.

m. Loosen the captive bolts (2) that secure the forward body section to the hinge assembly.

n. Remove the forward body section from the hinge assembly, and place on the forward body section truck (10, fig. 3-8); secure with the hand clamp (8) and hold-down strap (1).

o. Install the flathead screws (9, fig. 3-29) in the testing fixture mounting holes in the forward body section.

p. Remove the falling hook from the forward body section hoist.

q. Move the truck and the forward body section (2, fig. 3-8) to a temporary storage area.

## 5-2. Removal of the Testing Fixture

a. (Deleted.)

b. Loosen the captive bolts (8, fig. 3-28) that secure the testing fixture to the rear body section (1). Remove the fixture.

c. Remove the motor head heater (1, fig. 4-31).

d. Secure all the wiring harnesses extending from the rear main fins to prevent damage to the wiring harnesses.

### 5-3. Removal of the Rear Roll Ring

a. Remove the two plugs (1 and 5, fig. 3-11) from the lift points on the rear body section.

**Warning:** Check that the threads of the captive bolts of the rear body section hoist beam (4) and the bolt holes in the rear body section are in serviceable condition.

a.1. Rotate the rear body section to the normal flight position.

b. Position the rear body section hoist beam on top of the rear body section; secure with the two captive bolts (3).

c. Attach the hoisting device to the rear body section hoist beam (5, fig. 3-13), and raise the rear body section (3) enough to lift the rear roll ring (2) from the missile body truck (8).

d. Loosen the captive bolts (6, fig. 3-12), and remove the rear roll ring.

e. Lower the rear body section onto the missile body truck; remove the hoisting device from the hoist beam.

f. Remove the hoist beam.

g. Coat the threads of the plugs (1 and 5, fig. 3-11) liberally with soft film corrosion preventive compound, and install the two plugs in the rear body section.

### 5-4. Removal of the Access Doors and Door Assemblies

a. Remove the flathead screws (fig. 3-20) from each of the two missile motor section access doors; remove the access doors, if not previously removed.

b. Remove the flathead screws (fig. 3-22) from each of the two actuator section door assemblies; remove the door assemblies if not previously removed.

**Caution:** A thermostat wiring harness is attached to each of the two motor heater thermostat access cover plates. Carefully remove the thermostat access cover plate to prevent damage to the thermostat wiring harness or terminals.

c. Remove the two motor heater thermostat access cover plates (fig. 5-1) as prescribed in steps (1) through (3) below.

(1) Remove the six flathead screws (2) from the cover plate.

(2) Carefully remove the cover plate (3) and allow it to hang loosely from the thermostat wiring harness (4).

(3) Repeat steps (1) and (2) above, and remove the cover plate from the opposite side of the rear body section (1).

### 5-5. Removal of Wiring Harness

a. Release the two shipping straps (1, fig. 5-2) that secure the rocket motor initiator wiring harness (2) in position.

b. Disconnect connector P177A (7) from connector J177 (8).

c. Disconnect connector P170 (6) from connector J170 (9).

d. Remove the hexagon nut (3), lock-washer, if present, trusshead screw (10), and clamp (5) from the bracket (4), and remove the rocket motor initiator wiring harness.

### 5-6. Removal of the Blast Tube Shipping Support

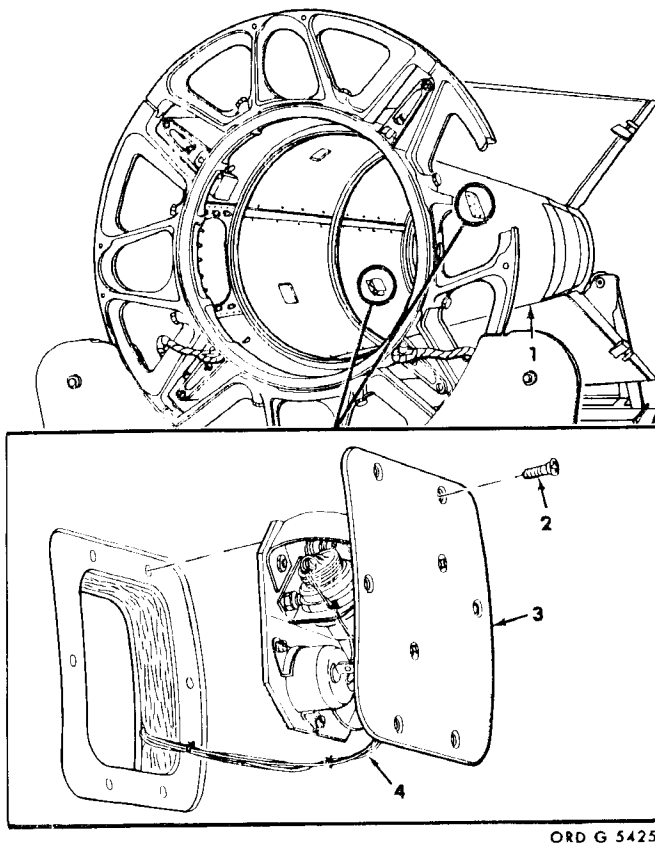
a. Reach through the access door opening on the left rear end of the missile motor section, and loosen the nut (7, fig. 5-3) on the captive bolt (6). Move the V-band coupling (9) from the blast tube shipping support (1) onto the blast tube (8).

b. Remove the hexagon-head bolts (13), flat washers (12), and hexagon nuts (11) that secure the blast tube shipping support to the missile rocket motor mounting ring (10).

c. Manipulate the blast tube shipping support out of the access door opening.

d. Remove the V-band coupling from the blast tube, and secure in position on the blast tube shipping support.

**Note.** Place the blast tube shipping support, attaching hardware, and V-band coupling in the forward and rear body section shipping container, and secure in place.



ORD G 5425

- 1 — Rear body section
- 2 — No. 10-32 X  $1\frac{1}{32}$  fl-hd screw (6).
- 3 — Motor heater thermostat access cover plate (2)
- 4 — Thermostat wiring harness

Figure 5-1. Removal and installation of the heater thermostat access cover plates.

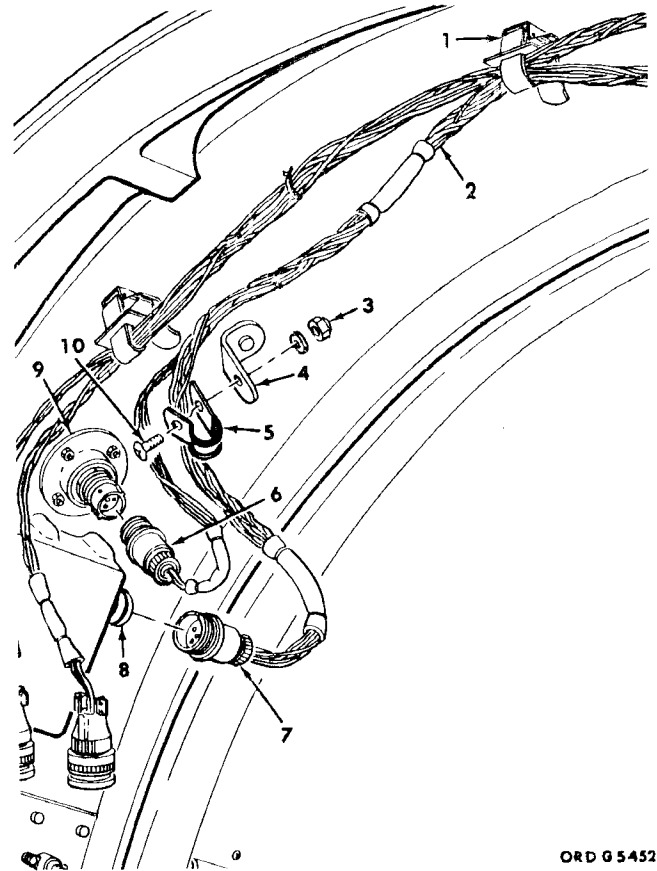
e. Inspect the liner of the blast tube for defects, pits, and scratches. Refer to paragraph 12-2 for standards of acceptability.

f. Reach through the opening at the rear end of the rear body section, and loosen the locknut (2) on the upper blast tube support assembly (3); turn the blast tube adjusting knob (4) to loosen the blast tube support shoe (5).

*Note.* MWO 9-1410-250-20/12 must be installed prior to installing a missile rocket motor subassembly that has been modified in accordance with MWO 9-1410-206-50/2.

*Note.* Perform g through k, and omit l and m below for missiles that have MWO 9-1410-250-20/12 installed.

g. Remove the two internal-wrenching bolts that secure the index pin and the 15 hexagon-head bolts (fig. 5-4) (missiles 10206 through 11935 and 13001 through 13938) or seven hexa-



ORD G 5452A

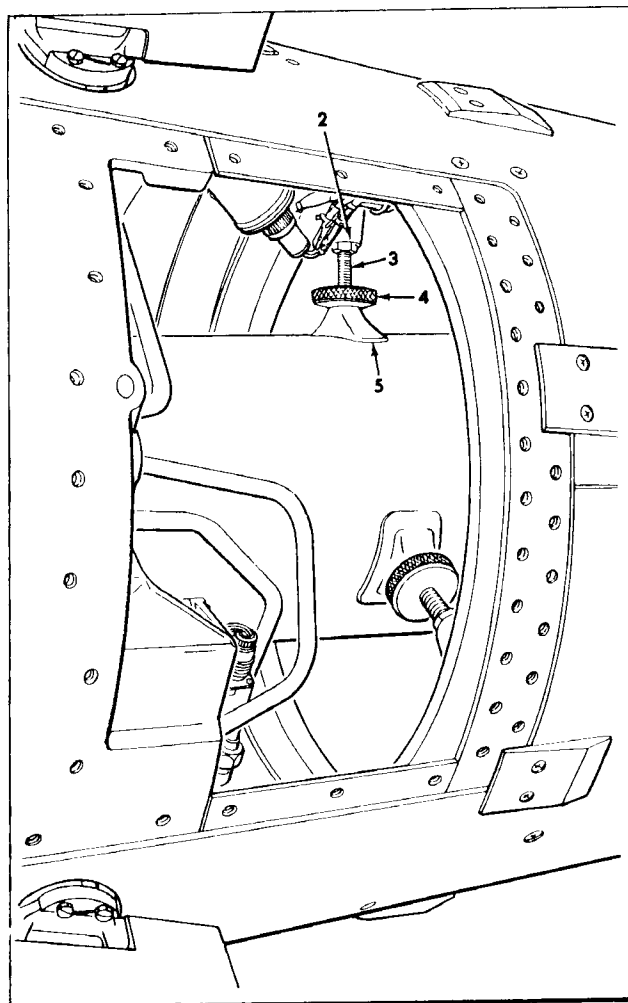
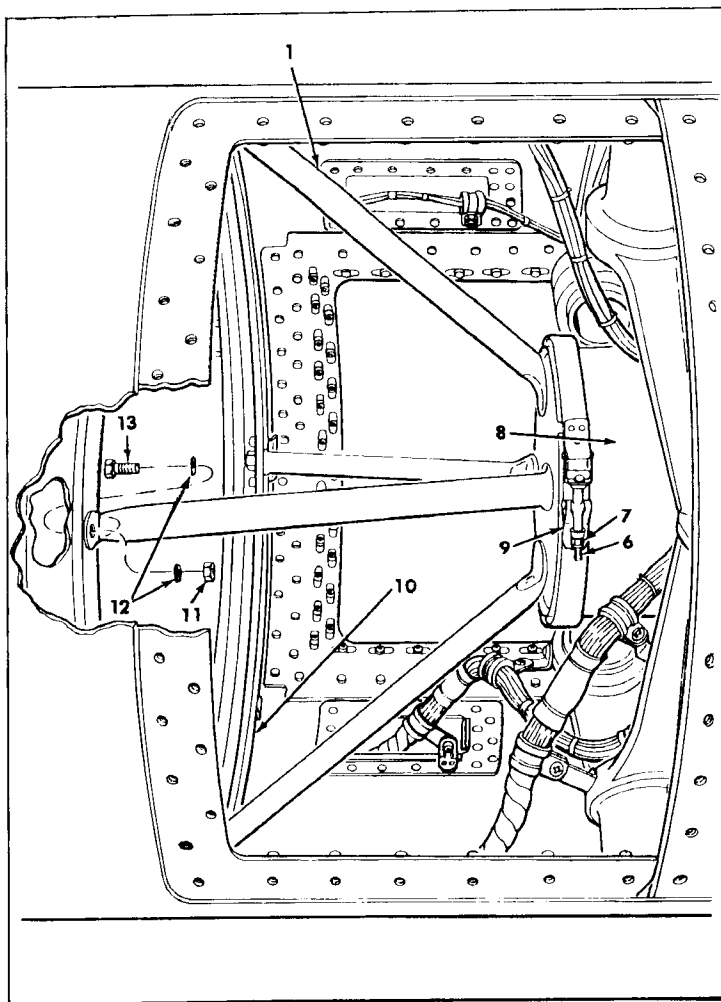
- 1 — Shipping strap
- 2 — Rocket motor initiator wiring harness
- 3 — No. 10-32 self-locking hex nut
- 4 — Bracket
- 5 — Clamp
- 6 — Connector P170
- 7 — Connector P177A
- 8 — Connector J177
- 9 — Connector J170
- 10 — No. 10-32 X  $\frac{1}{16}$  truss-hd screw

Figure 5-2. Removal and installation of the rocket motor initiator wiring harness.

gon-head bolts (missiles 13939 and subsequent) that secure the mounting ring or mounting plate to the rear of the actuator section.

h. Remove the hexagon nuts (4, fig. 5-5), hexagon-head bolts (5), and flat washers (6) securing the closure ring (2); remove the closure ring.

i. Position the closure ring as shown in A or B, figure 5-5, and secure with the 16 flat washers (6), 8 hexagon-head bolts (5), and 8 hexagon nuts (4); torque the bolts to 60 pound-inches.



ORD G5530

- 1 — Blast tube shipping support
- 2 — Locknut
- 3 — Blast tube support assembly (3)
- 4 — Blast tube adjusting knob (3)
- 5 — Blast tube support shoe (3)
- 6 — Captive bolt
- 7 — Nut

- 8 — Blast tube
- 9 — V-band coupling
- 10 — Missile rocket motor mounting ring
- 11 — 7/16 hex nut (4)
- 12 — 0.453-in.-id fl washer (8)
- 13 — 7/16-20 X 1-11/32 hex-hd bolt (4)

Figure 5-3. Removal and installation of the blast tube shipping support.

j. Install the mounting ring or mounting plate (fig. 5-4), and secure handtight with the 15 hexagon-head bolts (missiles 10206 through 11935 and 13001 through 13938) or seven hexagon-head bolts (missiles 13939 and subsequent).

k. Install the index pin, and secure it loosely with the two internal-wrenching bolts.

Note. Perform l below for missiles 10206 through 11935 and 13001 through 13938.

l. Loosen, but do not remove, the two internal-

wrenching bolts that secure the index pin and the 15 hexagon-head bolts (fig. 5-4) that secure the mounting ring to the rear of the actuator section.

Note. Perform m below for missiles 13939 and subsequent.

m. Loosen, but do not remove, the two internal-wrenching bolts that secure the index pin and the seven hexagon-head bolts that secure the mounting plate to the rear of the actuator section.

### 5-6.1. Preparation of the Container for Shipment

(1) Slide the moveable tracks (22, fig. 3-7) out of the container.

(2) Secure the rear body support mounts (fig. 3-9) to the moveable tracks.

(3) Secure each of the two support arms (6, fig. 3-7) to the movable tracks with the hexagon-head screws (4), flat washers (2), and lockwashers (3).

(4) Secure the forward shipping clamp (fig. 3-9) to the forward cradle with the captive bolts.

(5) Secure the rear shipping clamp (fig. 3-10) to the rear cradle with the captive bolts.

(6) Slide the moveable tracks into the container.

(7) Secure the moveable tracks to the stationary tracks (1, fig. 3-7) with the hexagon-head screws (20) and lockwashers (21).

(8) Secure the shipping support channel (11) to the support arms with the hexagon-head screws (8), flat washers (7), and self-locking hexagon nuts (5).

(9) Place and secure all shipping hardware, tunnels, brackets, and the shipping adapter, removed during uncrating, inside the container.

(10) Position the container cover (fig. 3-5) on the container, and secure with the quick-release clamps.

(11) Replace the extension handle in the log tube, and swing the log tube cover plate closed; secure the cover plate in position.



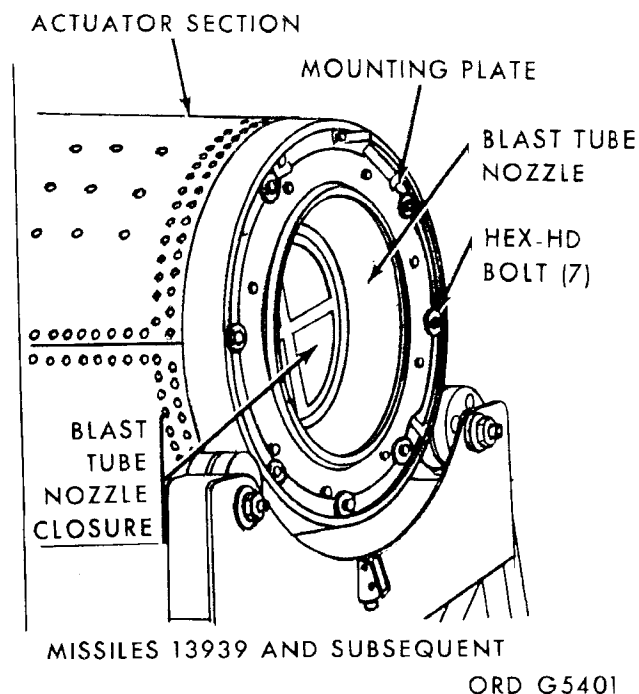
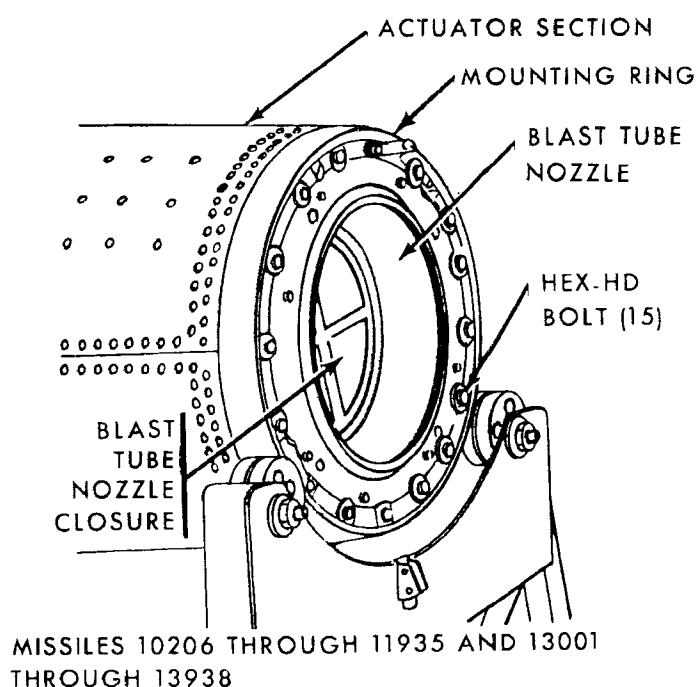
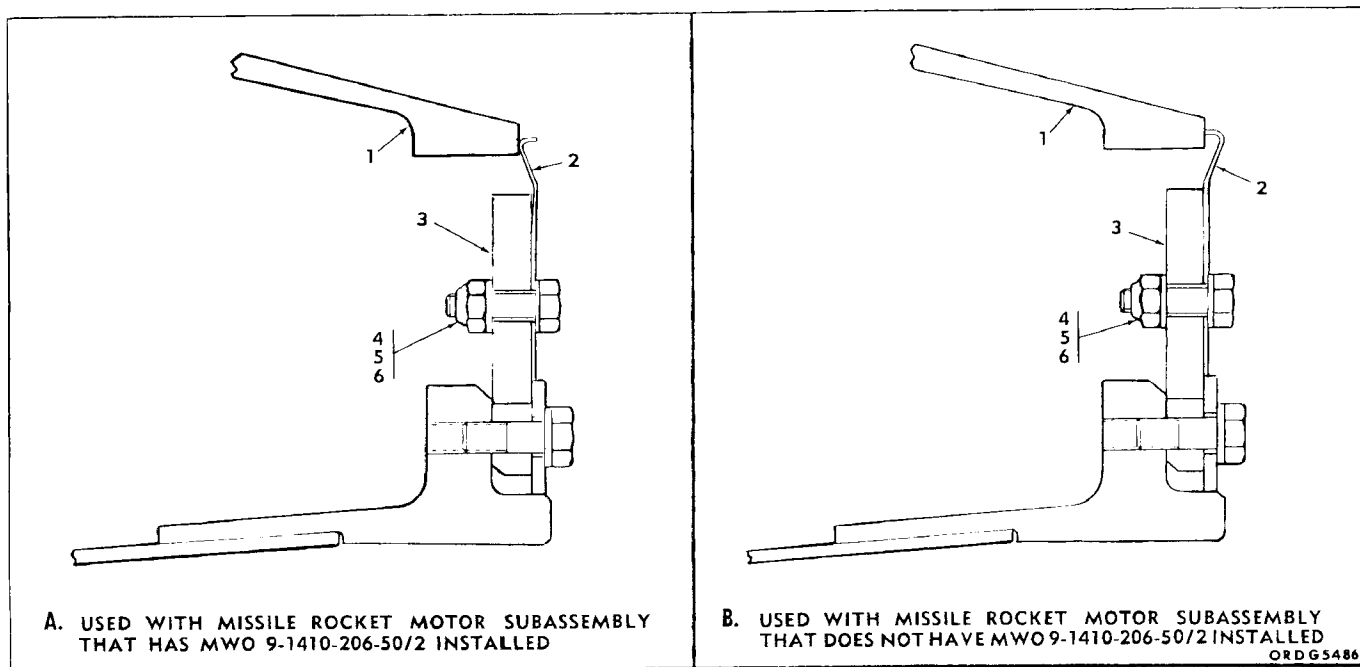


Figure 5-4. Adjustment of the mounting ring or mounting plate.



1—Blast tube nozzle  
2—Closure ring

3—Mounting ring or mounting plate  
4—1/4-28 hex nut (8)  
5—1/2-28 x 29/32 hex-hd bolt (8)  
6—0.265-in-id fl washer

Figure 5-5. Removal and installation of the closure ring.

## Section II. UNCRATING THE MISSILE ROCKET MOTOR SUBASSEMBLY

### 5-7. Removal from the Shipping Container

**WARNING:** The missile rocket motor subassembly contains explosives. All applicable safety regulations will be strictly enforced. Operations involving the handling of explosive items will be performed only in the areas specifically designated. These areas will meet quantity-distance requirements based upon the type and quantity of explosive involved. Where adjacent missiles are a hazard, a barrier will be provided for protection. Do not perform handling operations during electrical storms.

**WARNING:** Handling operations of the missile rocket motor subassembly will be supervised by qualified explosives personnel who thoroughly understand the hazards and risks involved. A minimum number of personnel will be permitted on or near the work location, and quantities of explosive materials will be kept to a minimum. Spilled explosive materials will be immediately removed, and the area thoroughly decontaminated before work continues.

**WARNING:** Explosive components containing electrical wiring must be protected at all times from stray voltages or induced electrical currents. A ground strap with a maximum ground resistance at 20 ohms must be attached from the component to a grounding stake. A CO<sub>2</sub> fire extinguisher will be provided. Extreme care will be exercised when handling explosive components whose size or weight makes handling difficult.

**CAUTION:** The propellant grain and the metal parts of the missile rocket motor subassembly can be damaged unduly by rough handling or dropping. A rocket motor which has been subjected to such damage or to extreme temperature could cause a malfunction when the missile is fired. Rocket motors so exposed will not be used until a complete inspection of the grain for serviceability has been made.

a. Perform an inspection of the shipping and storage container (par. 3-4).

b. Cut and remove seals on the base of the container.

c. Remove the nuts (27, fig. 5-6) or bolts and flat washers (28) from the box base (29).

**CAUTION:** Use the lifting cleats on the four corners of the container cover to remove it from the shipping frame. Lift the complete container with a forklift or other approved lifting device that uses the base of the container as a support.

d. Attach a sling (3) to the lifting cleats (4) on each corner of the container cover (1).

e. Attach the falling hook (2) of the hoisting device capable of lifting 5,000 pounds to the sling, and remove the container cover.

*Note.* The maximum resistance of the grounding stake in f below is 20 ohms.

f. Attach the ground strap (25) from the forward end of the rocket motor to the grounding stake (26).

g. Visually inspect the missile rocket motor subassembly (10) to make sure that the service life (table 15-8) has not been exceeded and there are no signs of external damage. If the service life has been exceeded, return the rocket motor subassembly, and obtain a newer one. Report any damage to the proper authorities.

**WARNING:** Do not attempt to adjust or remove the gas generator retaining ring (engine and adapter assembly ring) under any circumstances.

**CAUTION:** Use extreme caution in removing the shipping cover (20, fig. 5-6), as the desiccant container is attached to the inside of the shipping cover. Support the shipping cover to prevent the desiccant container from dropping and damaging the liner of the motor adapter.

i. Loosen the nut (21) on the captive bolt (22) that secures the V-band coupling (19) to the motor adapter.

*Note.* Retain the shipping cover for replacement in the shipping container.

j. Carefully remove the shipping cover and V-band coupling. Inspect and clean the V-band coupling.

k. Apply molybdenum disulphide lubricant to the internal surface of the V-band



coupling, and install it loosely on the blast tube forward flange (11, fig. 5-11).

**Warning:** An explosion-proof flashlight must be used to avoid any possibility of an electrical spark. Turn on the flashlight before inspection of the missile rocket motor subassembly.

l. Using an explosion-proof flashlight, inspect the rear of the missile rocket motor subassembly for presence of foreign matter, cracks in grain structure, and moisture. Inspect the liner of the motor adapter for pits and chips.

- (1) Remove moisture, using clean cotton rags or waste.
- (2) Wipe or sponge the moisture from the motor.
- (3) Dispose of contaminated cotton rags or waste used in removing moisture in accordance with existing safety regulations.

**Warning:** The possible presence of perchlorate crystals could cause an explosion during assembly and installation to the blast tube on the missile rocket motor subassembly. The rocket motor adapter must be wiped clean with a clean cloth prior to installation to the blast tube. Dispose of contaminated cloths used in removing perchlorate crystals in accordance with existing safety regulations.

m. Inspect for the presence of the pressure tap plugs (14, fig. 5-11) on the motor adapter (12). Insure that the plugs are tight.

n. Remove the truss-head screws (6, fig. 5-6) that secure the missile rocket motor initiator container (17) to the box base (12).

o. Remove and inspect the rocket motor initiator container (23) for signs of external damage.

**Warning:** Rocket motor initiators are explosive items. Exercise care in handling.

p. Loosen the screw (fig. 5-14) on the clamp that secures the container cover to the container.

q. Remove the container cover.

r. Remove the top styrofoam packing.

*Note.* There are two packing configurations of the missile rocket initiator container. One configuration con-

tains three initiators with a gasket on each; the other, two initiators and four gaskets.

s. Remove the missile rocket motor initiators, with shorting connectors attached, from the lower styrofoam packing.

**Caution:** Handle the initiators carefully to avoid puncturing or damaging the foil seal on the base of the initiator.

t. Check the quantity of gaskets. Remove one gasket, and replace the remainder of the gaskets and the rocket motor initiators in the lower styrofoam packing.

u. Remove the third shipping plug from the gas generator (approximately the 3 o'clock position).

v. Remove the old copper gasket (fig. 5-7) from the shipping plug, and install a new copper gasket.

w. Apply a coat of molybdenum disulphide lubricant to the threads of the shipping plug.

x. Install the shipping plug in the gas generator, and tighten to a torque value of 250 pound-inches.

y. Replace the top styrofoam packing in the container.

z. Replace the cover on the initiator container, and secure the clamp.

aa. Place the container in a suitable storage area.

ab. Remove the hexagon nuts (8, fig. 5-6) and lockwashers (9) that secure the two support clamps (7) to the two shipping supports, and remove the clamps.

ac. Loosen, but do not remove, the bolts (15) that secure the two half rings (14) to the two shipping supports (13).

## 5-8. Removal of the Shipping Rings

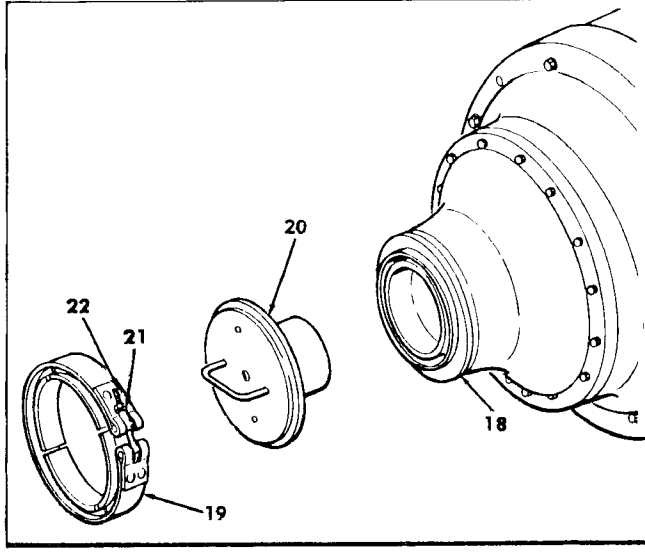
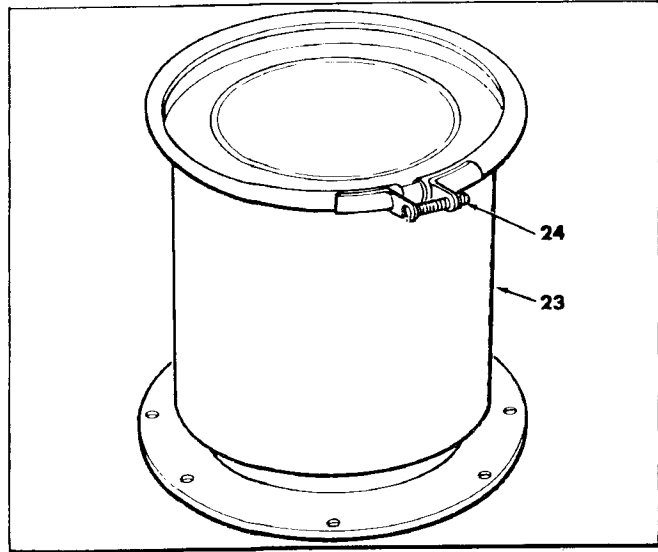
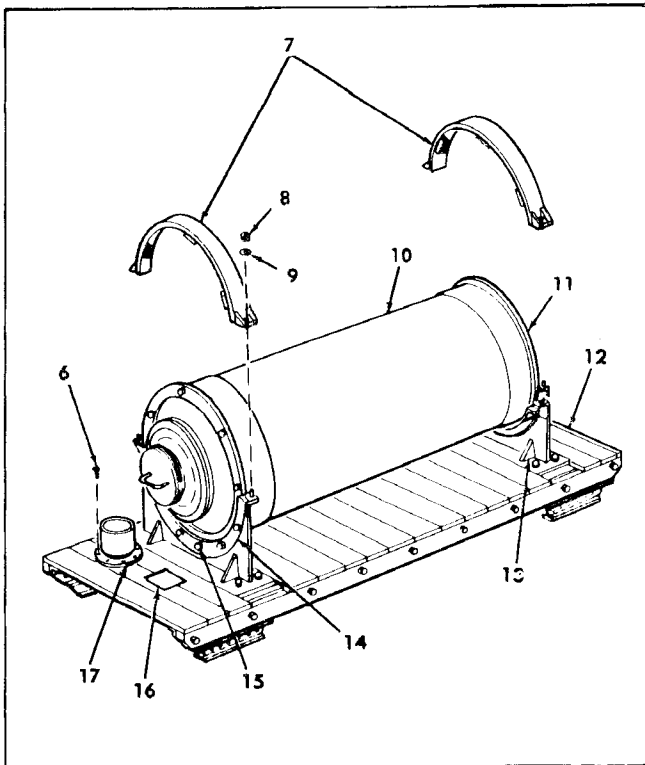
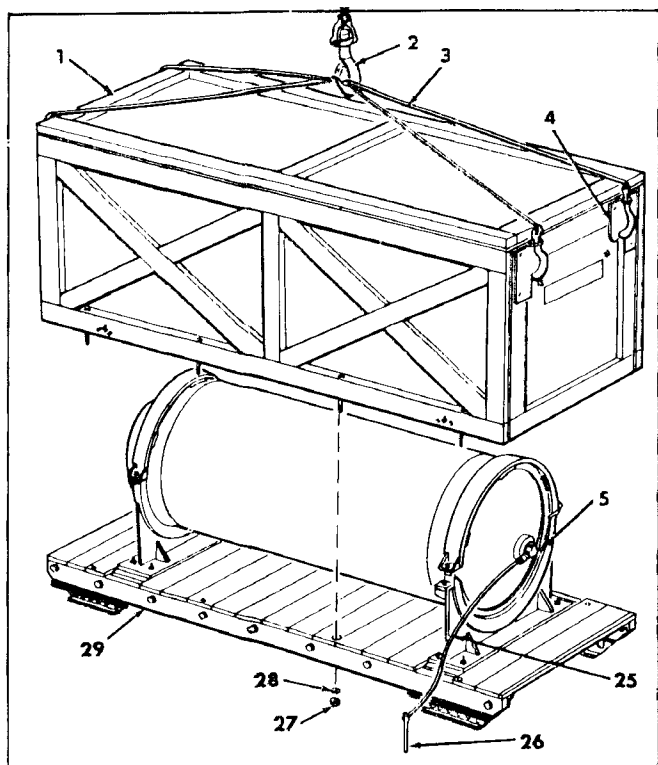
*Note.* If a two piece shipping ring is installed, omit a and b below.

a. Insert the wooden pallet (11, fig. 5-8) beneath the missile rocket motor subassembly (6). Block (10) each side of the missile rocket motor subassembly to prevent rolling, and raise with a fork-lift (7) or other approved lifting device.

b. Remove the hexagon-head bolts (5,8)

that secure the forward shipping ring (4, 9) to the forward end of the missile rocket motor sub-

assembly; remove the forward shipping ring.



ORD G 5526A

- 1 — Box cover
- 2 — Falling hook
- 3 — Sling
- 4 — Lifting cleat (4)
- 5 — Gas generator
- 6 — Truss-head screw (6)
- 7 — Support clamp (2)
- 8 — 1/4-in hex nut (4)
- 9 — 1/4-in int teeth lockwasher (4)

- 10 — Missile rocket motor subassembly
- 11 — Shipping ring
- 12 — Box base
- 13 — Shipping support (2)
- 14 — Half ring (2)
- 15 — Hex-hd bolt (14)
- 16 — Gasket package
- 17 — Missile rocket motor initiator container

- 18 — Motor adapter
- 19 — V-band coupling
- 20 — Shipping cover
- 21 — Nut
- 22 — Captive bolt

Figure 5-6. Uncrating and crating of the missile rocket motor subassembly.

23—Missile rocket motor initiator container  
 24—Clamp  
 25—Ground strap  
 26—Grounding stake

27—1/2-28 hex nut (8)  
 28—1/16-in-id fl washer (8)  
 29—Box base

Figure 5-6—Continued.

**WARNING:** Check that the threads of the captive bolts in the missile rocket motor hoist beam and the bolt holes in the missile rocket motor subassembly are in good condition.

*Note.* Guide pins on the "C" beam may be removed.

**CAUTION:** During *c* and *d* below, handle the missile rocket motor hoist beam (5, fig. 5-9) with the falling hook of the hoisting device attached at the HOIST POINT BEAM ONLY lifting point.

*c.* Attach the falling hook (3) from a hoisting device capable of lifting 5,000 pounds to the HOIST POINT BEAM ONLY lifting point (4) of the missile rocket motor hoist beam (5).

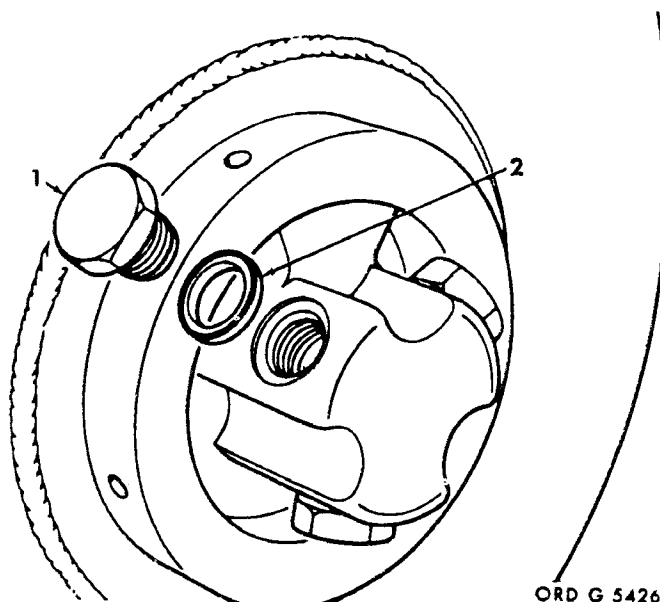
*d.* Position the hoist beam near the missile rocket motor subassembly (8). Align the four captive bolts (7) located on the hoist beam with the bolt holes in the forward end of the missile rocket motor subassembly. Tighten the captive bolts.

*e.* Transfer the falling hook of the hoisting device to the HOIST POINT CAP 3,000 LBS lifting point (2) on the hoist beam.

*f.* Lift the missile rocket motor subassembly from the container base (6).

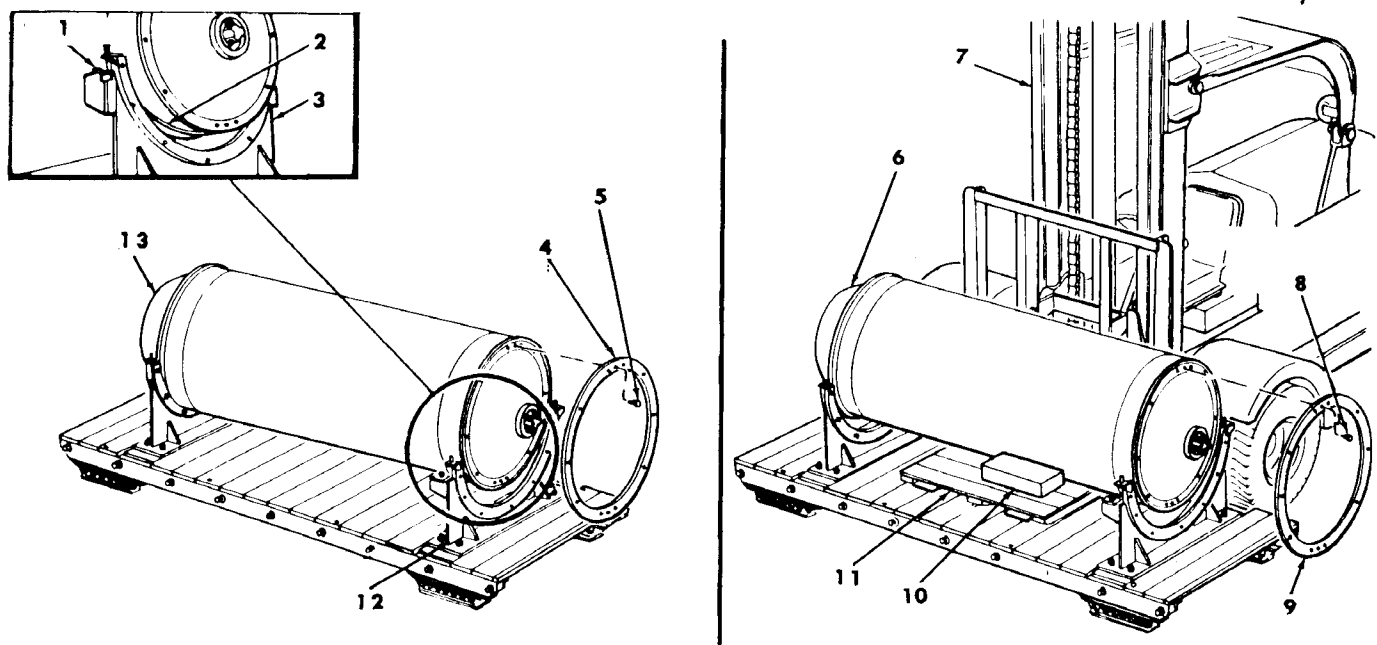
*g.* Remove the hexagon-head bolts (1) that secure the rear shipping ring (9) to the rear end and the split ring (if present) to the front end of the rocket motor subassembly. Remove the rear shipping ring and the front split ring (if present). Check that the rocket motor attach nut plates are in good condition.

*h.* Remove the shipping container to a suitable area.



1—Initiator shipping plug (3)  
 2—Copper gasket (3)

Figure 5-7. Removal and installation of the initiator shipping plug.



ORD G 5557

- 1—Bolt (2)
- 2—Lifting band (2)
- 3—Shipping support
- 4—Forward shipping ring
- 5—1/2-20 X 1-1/2 hex-hd bolt (8)
- 6—Missile rocket motor subassembly
- 7—Forklift

- 8—1/2-20 X 1-1/2 hex-hd bolt (8)
- 9—Forward shipping ring
- 10—Block (2)
- 11—Wooden pallet
- 12—Shipping support
- 13—Missile rocket motor subassembly

Figure 5-8. Removal and installation of the forward shipping ring.

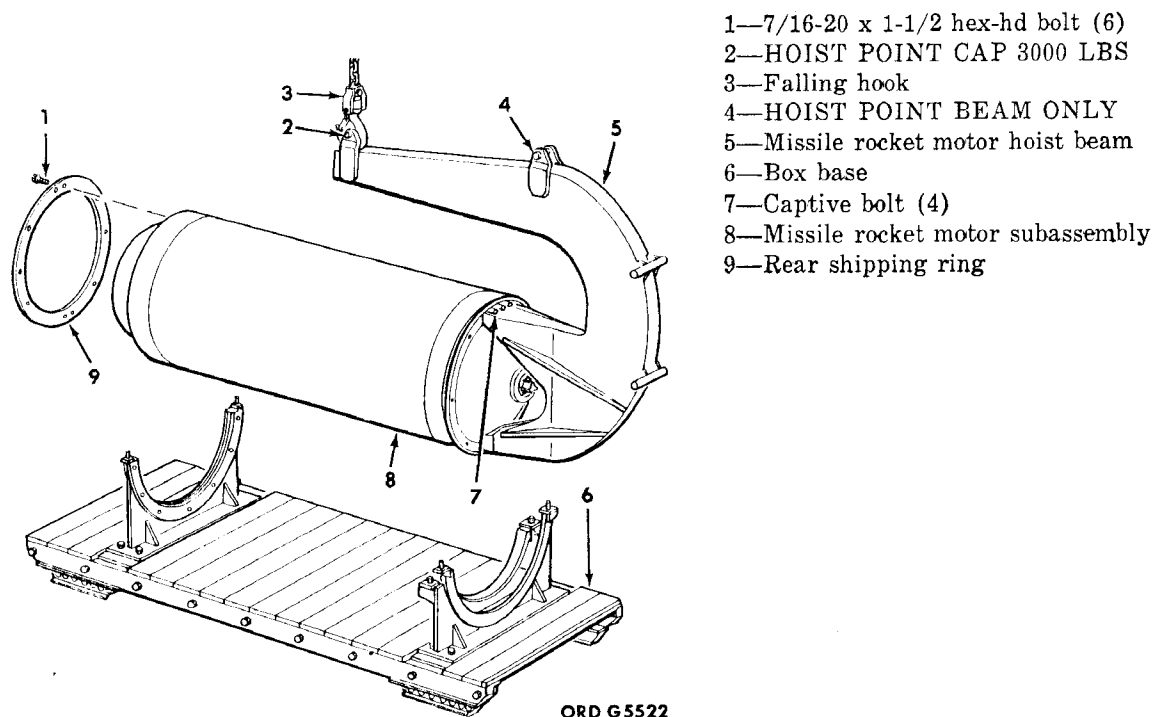


Figure 5-9. Removal and installation of the rear shipping ring.

### Section III. INSTALLATION OF THE MISSILE ROCKET MOTOR SUBASSEMBLY

**WARNING:** The missile rocket motor subassembly contains explosives. All applicable safety regulations will be strictly enforced. Operations involving the handling of explosive items will be performed only in the areas specifically designated. These areas will meet quantity-distance requirements based upon the type and quantity of explosives involved. Where adjacent missiles are a hazard, a barrier will be provided for protection. Do not perform handling operations during electrical storms.

**WARNING:** Handling operations of the missile rocket motor subassembly will be supervised by qualified personnel who thoroughly understand the hazards and risks involved. A minimum number of personnel will be permitted on or near the work location, and quantities of explosive materials will be kept to a minimum. Spilled explosive materials will be immediately removed, and the area thoroughly decontaminated before work continues.

**WARNING:** Explosive components containing electrical wiring must be protected at all times from stray voltages or induced electrical currents. A ground strap with a maximum ground resistance of 20 ohms must be attached from the component to a grounding stake. A CO<sub>2</sub> fire extinguisher will be provided. Extreme care will be exercised when handling explosive components whose size or weight makes handling difficult.

**CAUTION:** The propellant grain and the metal parts of the missile rocket motor subassembly can be damaged unduly by rough handling or dropping. A rocket motor which has been subjected to such damage or to extreme temperature could cause a malfunction when the missile is fired. Rocket motors so exposed will not be used until a complete inspection of the grain for serviceability has been made.

**Caution:** Be sure the surface upon which the missile body truck is to be moved is smooth terrain or paved.

## 5-9. Installation of Missile Rocket Motor Subassembly

a. Aline the longitudinal axis of the suspended missile rocket motor subassembly (fig. 5-10) with the axis of the rear body section on the missile body truck.

*Note.* The misalignment in *b* below prevents the possibility of the missile rocket motor subassembly colliding with the blast tube in the rear body section.

b. Rotate the rear body section slightly on the missile body truck to misalign alinement pins (17, fig. 5-11) on the missile rocket motor subassembly (13) and the alignment holes (16) on the motor mounting ring (3) in the rear body section.

c. Attach the ground strap from the rear body section to the grounding stake.

d. Check the interior of the rear body section (fig. 5-10) to assure that no connectors or fittings will interfere with the missile rocket motor subassembly as it enters the rear body section.

e. Hold the motor subassembly stationary, and slowly roll the missile body truck forward until the motor subassembly is encased in the rear body section.

f. Reach through the opening on the rear body section, and place the gasket on the motor adapter.

g. Rotate the rear body section to aline the alinement pins (17) with the corresponding alinement holes (16) in the motor mounting ring (3).

h. Check the vertical alinement between the blast tube forward flange and the flanges of the motor adapter. Turn the nut on the captive screw (7, Fig. 5-11) on the blast tube clamp (9) until proper alinement is obtained.

**CAUTION:** Use care to prevent damage to the mating end of the blast tube and the motor adapter during the mating operation.

i. Inch the missile body truck forward until the two alinement pins on the missile rocket motor subassembly are seated in the alinement holes, and the flanges of the motor adapter and blast tube forward flanges are seated.

*Note.* Place one metallic washer (1) next to the bolt head and one nonmetallic washer (15) on the bolt (2).

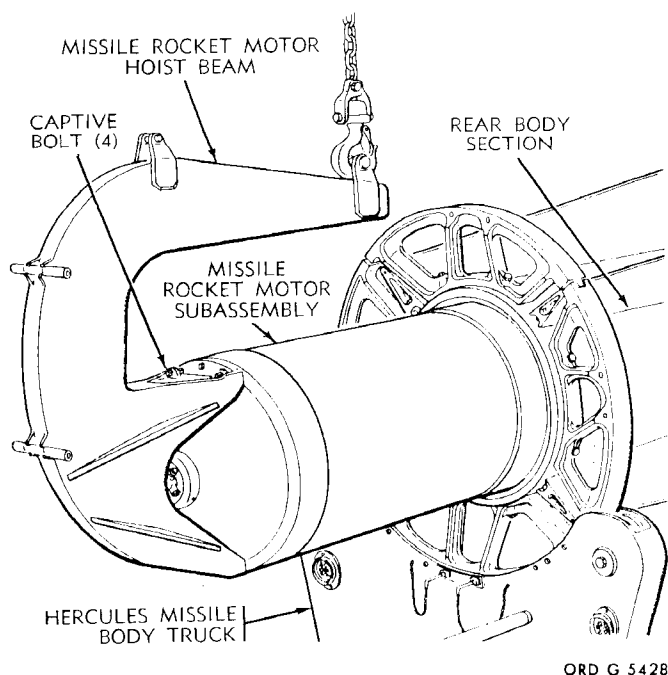


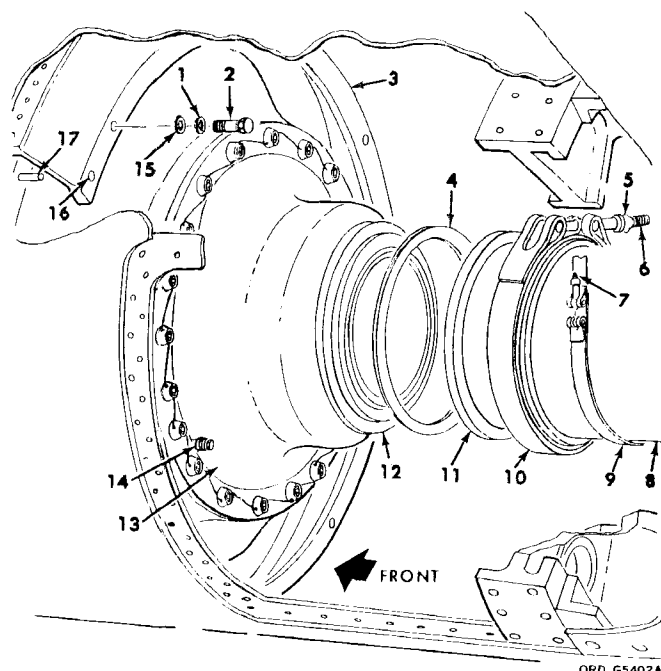
Figure 5-10. Removal and installation of the missile rocket motor subassembly.

j. Reach through the motor section access openings, and install the hexagon-head bolts (2), nonmetallic washers (15), and flat washers (1) that secure the missile rocket motor subassembly to the motor mounting ring. Tighten the bolts to the torque value given in table 15-9.

k. Reach through the openings, and position the V-band coupling over the mated flanges of the motor adapter and the blast tube forward flange with the captive bolt (6) on top and pointing toward right opening in the body section. Torque the nut (5) of the captive bolt (6) on the V-band coupling to 150 pound-inches, while tapping with a rubber or plastic mallet.

l. Reach through the actuator section opening on either side of the rear body section; loosen the locknut (2, fig. 5-3) and turn the blast tube adjusting knob (4) to loosen the lower blast tube support shoe (5). Repeat the procedure on the opposite side.

m. Reach through the right opening at the rear end of the missile motor section, and tighten the V-band coupling nut (5, fig. 5-11) to the torque value given in table 15-9, while tapping with a rubber or plastic mallet.



- 1—0.453-in-id fl washer (8)
- 2—7 / 16-20UNF-3A X 1-15 / 32 hex-hd bolt (8)
- 3—Motor mounting ring
- 4—Gasket
- 5—Nut
- 6—Captive screw
- 7—Captive screw
- 8—Blast tube
- 9—Blast tube clamp
- 10—V-band coupling
- 11—Blast tube forward flange
- 12—Motor adapter
- 13—Missile rocket motor subassembly
- 14—Pressure tap plug (2)
- 15—0.457-in-id nonmetallic washer (8)
- 16—Alinement hole (2)
- 17—Alinement pin (2)

Figure 5-11. Alinement of the missile rocket motor subassembly in the rear body section.

n. Reach through the actuator section opening, and adjust the blast tube adjusting knobs (4, fig. 5-3) on the three blast tube support shoes (5) until they contact the blast tube. Insure the adjusting knobs are tight.

o. Secure the three blast tube supporting assemblies by tightening the three locknuts. Tighten the locknuts to a torque value of 325 pound-inches.

p. Insert the self-locking pins through the handling ring segment.

q. Transfer the falling hook (3, fig. 5-9) to the HOIST POINT BEAM ONLY (4) lifting point on the missile rocket motor hoist beam (5).

r. Loosen the captive bolts (7) on the hoist beam; remove the hoist beam.

*Note.* Perform s below for missiles 10206 through 11935 and 13001 through 13938.

*Note.* A gap not to exceed one-eighth of an inch is permissible between the closure ring and the blast tube nozzle.

s. Aline the closure ring (2, fig. 5-5) concentric with the blast tube nozzle, and secure the mounting ring assembly by tightening the 15 hexagon-head and the two internal-wrenching bolts to a torque value of 120 pound-inches. Secure the wire index pin bolts with safety wire.

*Note.* Perform t below for missiles 13939 and subsequent.

*Note.* The closure plate should be centered. Adjust the blast tube adjusting knobs as necessary to perform t. below with a centered closure plate.

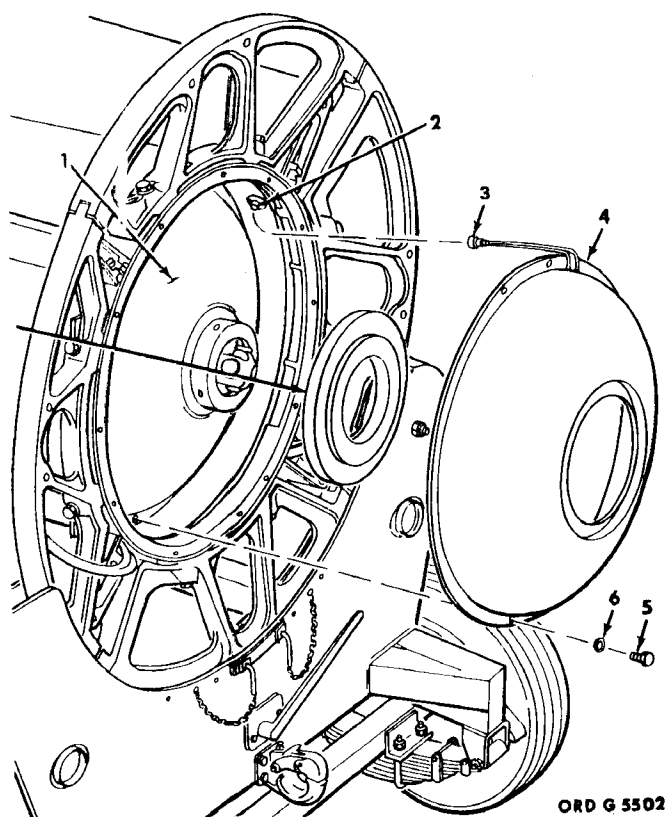
t. Aline the closure plate and ring concentric with the blast tube nozzle, and secure the closure plate and ring by tightening the seven hexagon-head and two internal-wrenching bolts to a torque value of 120 pound-inches. Secure the index pin bolts with steel safety wire.

u. Inspect the blast tube nozzle closure to insure that it is not cracked or broken and is securely and completely cemented to the nozzle.

v. Remove the ground strap from the missile rocket motor. Place insulator 9978376 around the gas generator with the rubber facing away from the motor. Position the motor head heater (4, fig. 5-12) on the forward end of the missile rocket motor subassembly (1) with the hexagon-head bolts (5) and nonmetallic washers (6). Center the motor head heater on the missile rocket motor subassembly, and tighten the bolts snugly.

*Note.* Insulator 9978376 replaces insulator 9032022 on all missiles.

w. Connect the wiring harness assemblies inside the forward portion of the missile motor section as prescribed in steps (1) through (3) below. In each case, insure positive mechanical mating.



- 1—Missile rocket motor subassembly
- 2—Connector J171
- 3—Connector P171
- 4—Motor head heater
- 5—7/16-20 x 23/32 hex-hd bolt (4)
- 6—7/16-in-id nonmetallic washer (4)
- 7—Insulator

Figure 5-12. Removal and installation of the motor head heater.

(1) Connect connector P171 (3) to connector J171 (2). Make certain that the orange band on P171 is visible after the connection is made.

(2) Connect connector P170 (fig. 5-13) to connector J170. Make certain that the orange band on P170 is visible after the connection is made.

(3) Connect connector P177A to connector J177. Make certain that the orange band on P177A is visible after the connection is made.

x. Secure the rocket motor initiator wiring harness branch leg for connector P177A to the bracket (4, fig. 5-2) with a clamp (5), trusshead

screw (10), self-locking nut (3) and washer, if present.

y. Remove the ground strap from the rear body section.

### 5-10. Final Assembly of the Missile Rocket Motor Subassembly

**CAUTION:** The thermostat wiring harness must be completely inside the motor section when the thermostat access cover plates are installed to insure that the harness is not pinched between a cover plate and the rear body section.

a. Install the two motor heater thermostat access cover plates (3, fig. 5-1), one on each side of the rear body section, and secure each cover plate to the rear body section with the six flathead screws. Torque to 25 pound-inches.

b. Position the left motor section access door (3, fig. 3-20), and secure to the missile motor section with the flathead screws. Tighten the screws to the torque value given in table 15-9.

c. Perform steps (1) through (3) below to install the two actuator section door assemblies (fig. 3-22) on the actuator section.

(1) Secure each door assembly to the actuator section with the flathead screws. Tighten the screws to the torque value given in table 15-9.

(2) Rotate each of the joining pads so that they extend over the access door and install the flathead screws.

(3) Tighten the flathead screws in each pad to a torque value of 25 pound-inches.

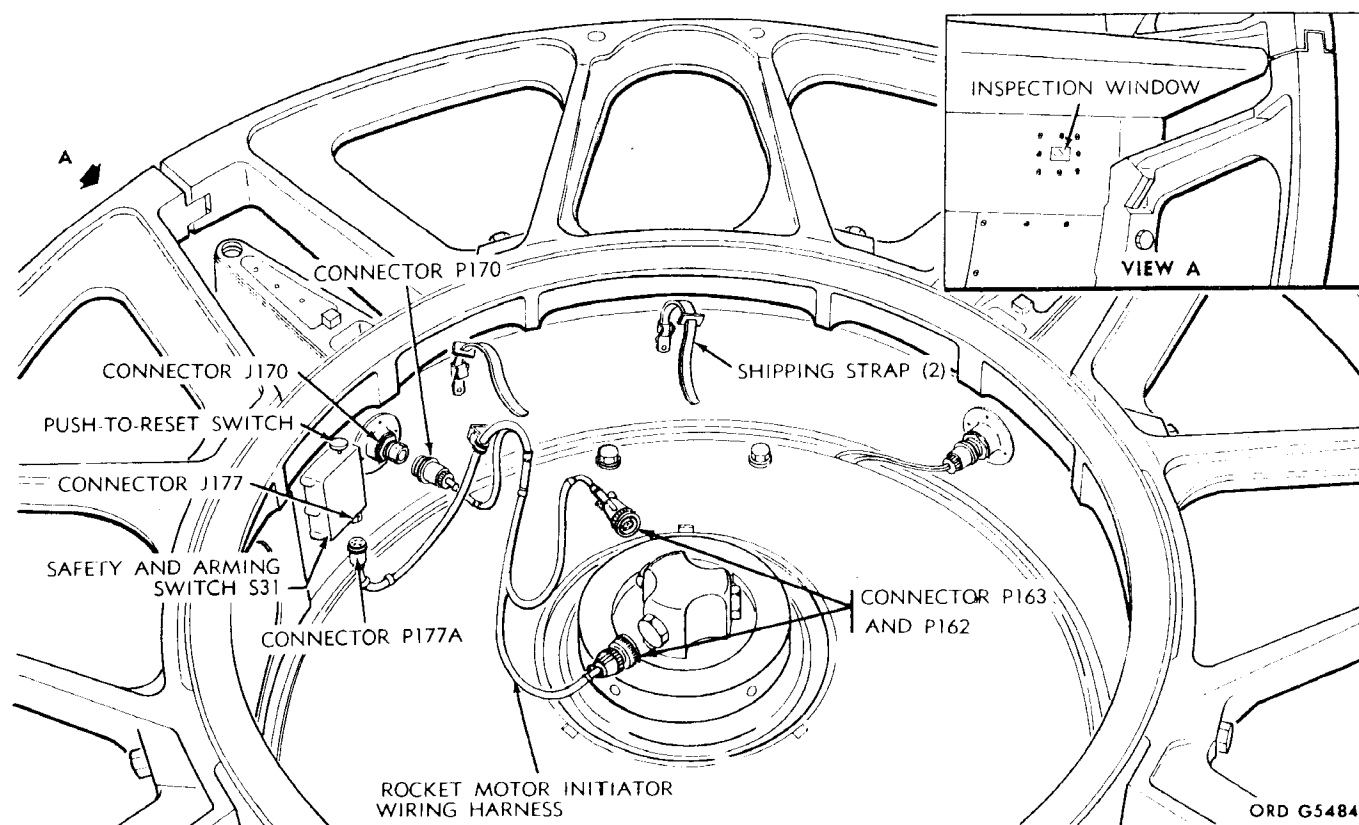
d. Perform steps (1) through (3) below to prepare the missile rocket motor subassembly shipping container for shipment or storage.

(1) Stow the two shipping rings (11, fig. 5-6), the shipping cover (20), hexagon-head bolts (5, 8, fig. 5-8), and hexagon-head bolts (1, fig. 5-9) inside the shipping container.

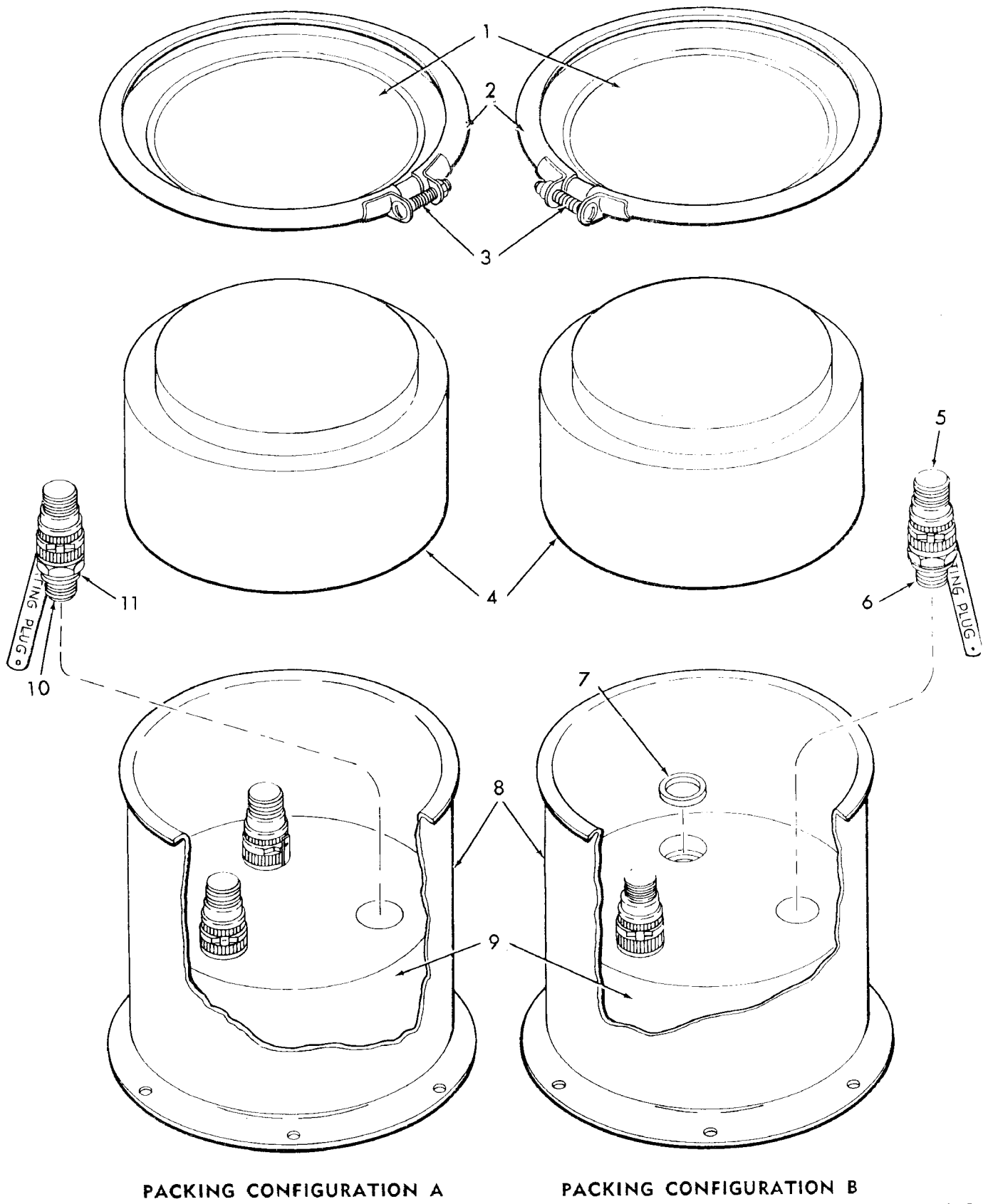
(2) Install the two support clamps (7, fig. 5-6) on the shipping supports (13), and secure each clamp with two internal-teeth lockwashers (9) and hexagon nuts (8).

(3) Install the box cover (1), and secure to the box base (29) with the flat washers (28) and hexagon nuts (27).





**Figure 5-13. Disconnection and connection of rocket motor initiator wiring harness connectors P170 and P177A.**

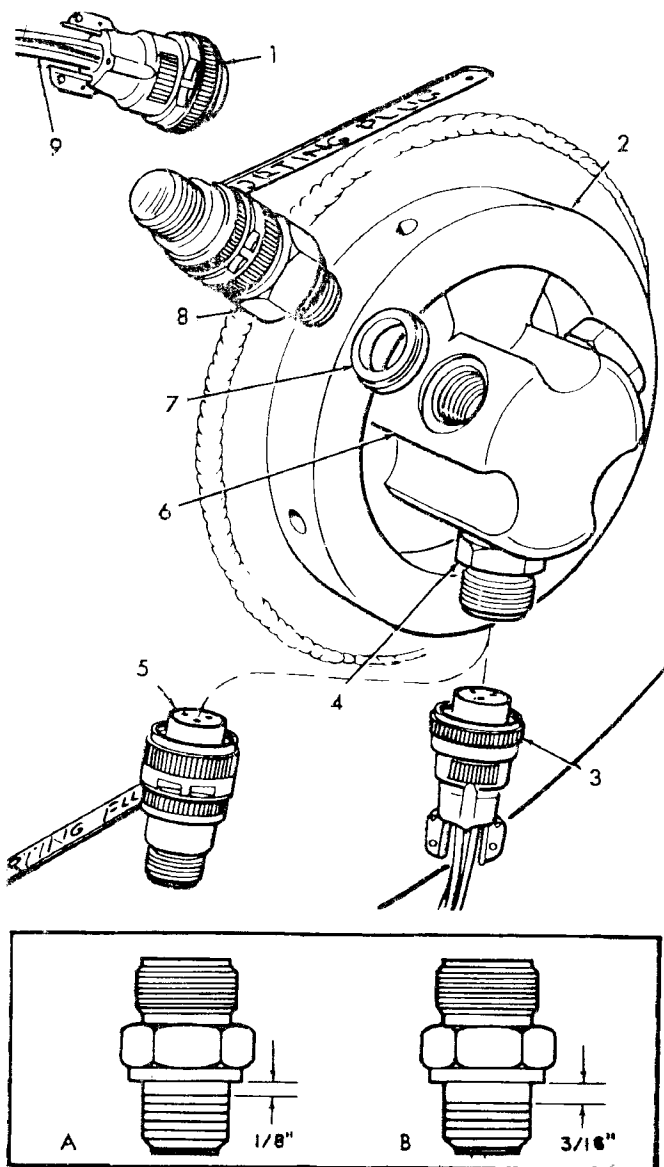


ORD G5342

Figure 5-14. Uncrating and crating of the missile rocket motor initiators.

- |                                      |   |
|--------------------------------------|---|
| 1—Container cover                    | 7—Gasket (4)                                |
| 2—Clamp                              | 8—Missile rocket motor initiator container. |
| 3—Screw                              | 9—Lower styrofoam packing                   |
| 4—Top styrofoam packing              | 10—Missile rocket motor initiator (3)       |
| 5—Shorting connector (2)             | 11—Gasket (4)                               |
| 6—Missile rocket motor initiator (2) |   |

Figure 5-14—Continued.



- 1—Connector P163
- 2—Retaining ring
- 3—Connector P162
- 4—Connector J162
- 5—Shorting connector (2)
- 6—Gas generator
- 7—Copper gasket (3)
- 8—Connector J163
- 9—Rocket motor initiator wiring harness

Figure 5-15--Continued.

ORD G 5343

*Figure 5-15. Removal and installation of the missile rocket motor initiators.*

*Figure 5-16. (Deleted)*